

AMENDMENTS TO THE CLAIMS

Please amend the claims as shown below. A complete listing of all pending claims is presented.

1. (Currently amended) A corneal surgery apparatus comprising:
 - an irradiation optical system having an irradiation reference axis, for irradiating a laser beam which brings about ablation of a cornea of a patient's eye onto the cornea;
 - a moving unit which relatively moves the irradiation reference axis in two-dimensional directions orthogonal thereto with respect to the patient's eye;
 - [an alignment] a positional displacement detection unit which detects a predetermined position of the patient's eye by picking up an image of an anterior-segment of the patient's eye and processing an image signal thereof, and detects a direction and amount of positional displacement of the detected position in the two-dimensional directions [of] with respect to the irradiation reference axis [with respect to a predetermined position of the patient's eye by picking up an image of an anterior-segment of the patient's eye and processing an image signal thereof];
 - [a movement control unit which obtains control data for the moving unit based on a detection result of the alignment detection unit; and]
 - [a] an [duction] inclination detection unit which detects at least one of a characteristic point in the anterior-segment and a target provided to the anterior-segment by picking up an image of the anterior-segment and processing an image signal thereof, and based on a detection result thereof, detects a direction and angle of inclination [of a line of sight] of the patient's eye with respect to the irradiation reference axis[,];and
 - [wherein the movement control unit corrects the obtained control data based on a

detection result of the duction detection unit.]a movement control unit which obtains control data for the moving unit based on the detected direction and amount of positional displacement and the detected direction and angle of inclination.

2. (Previously Presented) The corneal surgery apparatus according to claim 1, wherein the target provided to the anterior-segment is one selected from a plurality of marks previously provided to a sclera and a plurality of targets projected onto an iris.

3. (Previously Presented) The corneal surgery apparatus according to claim 1, wherein the characteristic point in the anterior-segment is one selected from an iris pattern and an edge of a corneal limbus.

4. (Cancelled)

5. (Previously Presented) The corneal surgery apparatus according to claim 1, further comprising an irradiation control unit which controls laser irradiation based on whether at least one of the respective detection results of the alignment detection unit and the duction detection unit is in a predetermined allowable range of its own.

6. (Cancelled)

7. (Cancelled)

8. (Currently amended) A corneal surgery apparatus comprising:

an irradiation optical system having an irradiation reference axis, for irradiating a laser beam which brings about ablation of a cornea of a patient's eye onto the cornea;

moving means for relatively moving the irradiation reference axis in two-dimensional directions orthogonal thereto with respect to the patient's eye;

[alignment] positional displacement detection means for detecting a predetermined position of the patient's eye by picking up an image of an anterior-segment of the patient's eye and processing an image signal thereof, and detecting a direction and amount of positional displacement of the detected position in the two-dimensional directions [of] with respect to the irradiation reference axis [with respect to a predetermined position of the patient's eye by picking up an image of an anterior-segment of the patient's eye and processing an image signal thereof];

[movement control means for obtaining control data for the moving means based on a detection result of the alignment detection means;]

[duction] inclination detection means for detecting at least one of a characteristic point in the anterior-segment and a target provided to the anterior-segment by picking up an image of the anterior-segment and processing an image signal thereof, and based on a detection result thereof, detecting a direction and angle of inclination [of a line of sight] of the patient's eye with respect to the irradiation reference axis; and

[correction means for correcting the obtained control data based on a detection result of the duction detection means] movement control means for obtaining control data for the moving means based on the detected direction and amount of positional displacement and the detected direction and angle of inclination.

9. (Previously Presented) The corneal surgery apparatus according to claim 8, further comprising irradiation control means for controlling laser irradiation based on whether at least one of the respective detection results of the alignment detection means and the duction detection means is in a predetermined allowable range of its own.

10. (Cancelled)

11. (Cancelled)

12. (Cancelled)

13. (Previously Presented) The corneal surgery apparatus according to claim 8, wherein the target provided to the anterior-segment is one selected from a plurality of marks previously provided to a sclera and a plurality of targets projected onto an iris.

14. (Previously Presented) The corneal surgery apparatus according to claim 8, wherein the characteristic point in the anterior-segment is one selected from an iris pattern and an edge of a corneal limbus.

15. (Previously Presented) The corneal surgery apparatus according to claim 8, wherein the duction detection means includes storing means for storing information on at least one of the characteristic point in the anterior-segment and the target provided to the anterior-segment in a state where the irradiation reference axis and the line of sight of the

patient's eye are made coincident before surgery, and detects the inclination of the line of sight with respect to the irradiation reference axis before and during the surgery by making a comparison between the information stored in the storing means and the detection result.

16. (Previously Presented) The corneal surgery apparatus according to claim 8, wherein the alignment detection means detects the positional displacement in the two-dimensional directions of the irradiation reference axis with respect to a pupil center position of the patient's eye.

17. (Previously Presented) The corneal surgery apparatus according to claim 1, wherein the duction detection unit includes a storing unit which stores information on at least one of the characteristic point in the anterior-segment and the target provided to the anterior-segment in a state where the irradiation reference axis and the line of sight of the patient's eye are made coincident before surgery, and detects the inclination of the line of sight with respect to the irradiation reference axis before and during the surgery by making a comparison between the information stored in the storing unit and the detection result.

18. (Previously Presented) The corneal surgery apparatus according to claim 1, wherein the alignment detection unit detects the positional displacement in the two-dimensional directions of the irradiation reference axis with respect to a pupil center position of the patient's eye.